World Scientific
www.worldscientific.com

Marketing Information System (MkIS): Benefits for Small and Medium Enterprises in Fiji

Kritika Devi[*,‡], Gurmeet Singh[*,§] and Rafia Naz[†,¶]

*School of Management and Public Administration
Faculty of Business and Economics
The University of the South Pacific, Suva, Fiji
†Business Department, James Cook University, Singapore
‡s11049811@student.usp.ac.fj
§singh g@usp.ac.fj
¶rafia.naz@jeu.edu.au

Abstract. The purpose of this paper is to highlight the benefits of using Marketing Information System (MkIS) for Small and Medium Enterprises (SMEs) in Fiji. The paper comprises of quantitative data, which is comprehensively analysed statistically. Structured questionnaire was used to collect data from the SMEs from five major towns in Fiji forming a sample of 96 SMEs. This research has found that, SMEs in Fiji are quite aware of the resulting benefits of MkIS, though the usage rate is low. This has resulted in changes for SMEs' business in terms of growth (sales and profits), from the time when SMEs started using MkIS or any form of technologies. The importance of MkIS in making extreme decision is also tested and analysed.

Keywords: Marketing information system; small and medium enterprise in Fiji; benefits.

1. Introduction

In many parts of the world, there has been a significant movement towards innovation and growth for successful markets. For many developed and developing countries, small and medium enterprises (SMEs) have been major contributors to their economic growth, development and employment. Many factors have led to the growth of SMEs; however it is timely decision-making that is achieved through marketing information systems (MkIS) that has received considerable interest, contributing towards SME growth (Hakhu, 2010). The Research evidence suggests that MkIS has helped SMEs improve their marketing practices, marketing offerings and understanding of customers' need via rapid increase in sales and profits volume (Berenson, 1969; Emmanuel, 2009; Khosla, 2011).

MkIS by definition is an enduring and interacting structure of people, equipment and procedures to congregate, arrange, analyse, evaluate and distribute relevant, timely and accurate information for use by marketing decision makers to improve their marketing planning, implementation and control (Lingham, 2008). George (1998) proposes the need to reckon the benefits from the investments in MkIS, which will add value to its customers through accomplishing greater customer satisfaction value. On the other hand, Edwards (2009) stresses that technology confers competitive advantage by improving sales, profits and retaining customers, only if attentively selected.

With particular reference to Fiji, various growing businesses need to adapt towards integrating MkIS in order to move towards successful marketing. There still remains a gap in this regard. MkIS is essential tool to help SMEs to grow. This system would bring about lots of changes in the daily marketing practices and decision making of SMEs that is only possible through dedications, commitments and financial diplomacy. Motibhais, Vinod Patel, Tappoo were once SMEs but with their dedications, commitments, disciplines and financial prudence; they are now larger business making sustainable business progresses (Waqabaca, 2010). A developing country like Fiji is made up of many SMEs, and every year growth is cited. Consequently, these SMEs can expect significant growth using MkIS and strengthen their marketing capabilities. However, the penetration of innovation and usage of ICTs is very low for SMEs in Fiji (Devi, 2008), thus there is a great need for awareness and motivation for employing

---

§Corresponding author.

MkIS in SMEs. Large numbers of people depend on SMEs for their living either directly or indirectly. SMEs growth contributes to the economic development in terms of creating employment, providing sustainability and innovation in the economy as a whole (Murray, 2005; Byrt, 2007; Narube, 2007). Hence, integration of MkIS will help SMEs in Fiji to monitor their daily activities closely that indirectly may lead to more profit, employment and increase in income level. All of these benefits to SMEs will have significant effect on the economy. One of the significant characteristics of a blooming and growing economy is the booming and flourishing of SMEs sector, thus, SMEs play a vital role in the development of a country.

In the Fijian context, the definition of SMEs is set by the National Centre of Small and Medium Enterprise development Act (2002) which states that a small business is any enterprise that has a turnover or total assets between $30,000 and $100,000 and employs between 6−20 people whilst a medium business is an enterprise that has an annual turnover or total asset more than $100,000 and $500,000 and employees between 21−50 people.

2. Background and Hypothesis Formulation

MkIS has wide applications with respect to daily business activities. According to Montgomery and Urban (1969), MkIS is designed to assist the managers in direct planning and in marketing decision making. Kishore (1999) states that MkIS is very important as it allows for greater communication with customers, and also permeate tracking the flow of information.

Moreover, Li and Rogers (1993) highlight that MkIS helps to achieve the purpose of satisfying customer's needs and wants at a profit. Hence, it becomes important to use proper system to cater for all the business information needs and all the factors which would lead to the making of the best decision. Berenson (1969) supports that increased business complexity calls for more and more data for better performances, as nowadays markets have national scope. He also explains that the speed with which today's business decisions are made has increased and hence MkIS needs to be developed to cater for such rapid expansions. MkIS aims to provide assistance in management of all business information and sales document to improve marketing and promotional process (Lin and Hong, 2009).

In today's modern era the most valuable asset to any company is its data (Covacheva, 2003). According to Gomes *et al.* (2005) one of the important components of MkIS is analytical marketing system, through which the data gets converted into meaningful marketing information. This marketing information then increases the likelihood of best decision making that benefits organizations (Berenson, 1969). Ultimately, all this is done to meet the growing concern of the organizations throughout the world, which is customer satisfaction (Dutka, 1994). This system also makes the work of the marketer easier, based on the factual information that comes in time and also through the analysis of the current products in the market (Brunda, 1996). The Project Mobius (2011) also highlights the benefits of MkIS. Some of these benefits are in the areas of sales forecasting, consumer research, logistic management, sales management system, new market entry, product adaptation and order processing system.

Moreover, Vencil (2003) stresses that the first step in developing an information system (IS) should be to identify the information important to the business marketing efforts. Dobzhinsky (2011) suggests that MkIS provides the business with the tool to deal with any complexity. The system generates information in forms that are easy to understand and use. Due to the computer network of the system, the information is immediately accessible to the decision-makers (Quester *et al.*, 2004). Marimuthu and Muthaly (2009) draw attention to the perceived benefit of the system and ISs adoption. In their studies, they highlighted the system deals with effective transmission of messages to their prospective customers. The Russian Market Association has developed a Russian MkIS to assist the business communities to increase the competitive power of their companies through the use of all opportunities and tools provided by marketing. The Food and Agriculture Organisation (FAO) corporate document repository (1997) highlights that MkIS can help to reduce the uncertainty in marketing related decision making as marketing research and marketing intelligence are the components of MkIS. Talvinen (1995) proposes that MkIS has been seen as a useful system to support the marketing team in its decision-making.

According to FAO corporate document repository US (2011), emphasizes that through the use of MkIS, the information obtained helped a handicraft seller in Uganda to find a suitable segment and target market for its products. Lokhande and Srivastava (2004) suggest that MkIS benefits in terms of the development of very useful and reliable information. According to Goessl (2011) the benefits of MkIS are that it reduces the level of redundancy hence resulting in cost-saving and time-saving. Also the system is efficient and incorporates new innovations which keeps a business competitive and helps an organization sustain visible status in the global economy, the author added.

According to Hakhu (2010) MkIS is emerging as one of the excellent opportunities for the reduction in the time delays in the transfer of the information. Hence, with the help of MkIS, SMEs can compete in global markets and

MkIS can provide timely precise information with the aim of supporting SMEs for decision-making purpose. MkIS can take SMEs forward through the fact that MkIS helps in greater in-depth decision making for the businesses. Business transactions would smoothly flow through the incorporations of technologies and MkIS. Bakos (1991) suggests that MkIS helps in reducing the buyers' cost while boosting the efficiency of the business transactions, therefore creating various possibilities for the strategic use of this system for the purpose of business marketing directions. According to Murray (2005), the MkIS model focuses on the business culture of the SMEs and its scope covers the economy, however, if the MkIS model is not introduced in SMEs, it will be a hindrance for its daily business activities leading to unsuccessful planning and regulation.

Subsequently, the understanding of MkIS and technologies will allow the easy use, practice and integration of these technologies for executing activities in marketing mix in order to achieve ultimate degree of success (Hess *et al.*, 2004). Berenson (1969) emphasizes that the managers need to understand and get more awareness of MkIS in order to take advantage of the systems capability leading to the business growth by obtaining the resulting output of the business. SMEs grow through choosing better strategies for decision making and in order to formulate clear business strategies (Al-allak, 2010), gaining a better understanding and awareness of potential technologies are important. According to Buttery and Tamaschke (1996), the respondents in his research were unable to understand well about MkIS, hence it may hinder the proper usage of MkIS to achieve the desired output for the SMEs and its growth. Thus, if proper understanding and awareness of this mechanism will exist, only then proper utilization of MkIS can be made. Eventually the adequate use of this system will show the progress in the output results of SMEs leading to their growth.

According to Al-allak (2010) SMEs using MkIS leads to the economic growth in terms of technological growth (becoming e-businesses to improve tourism economy). MkIS leads to a lot of benefits for SMEs in terms of providing useful information, assessing the environment carefully to make proper marketing and other decisions. Sharma and Bhagwat (2006) in their research mentioned that for India there is a need to conduct a survey-based research to get the picture of the IS-related practices going on in SME sectors, which is a progressive driver of the Indian economy. Hence, management of IS is essential for SMEs to grow and make significant changes. SMEs make up the economic growth and they also make significant contributions in the development, thus, SMEs can be relied on for the economic development. Their contributions can be in the form of GDP, income, employment and poverty. In Tanzania, SMEs play a key role in their economic development (Melchioly and Saebo, 2010). They believe that ICT will help the SME to improve their performances since it helps widely in the entrepreneur opportunities for the economy. Hence, the review shows that the SMEs using MkIS and technologies are making significant impact on SME and economic growth. Thus, Hypothesis 1 is as follows:

H1: *MkIS usage leads to benefits for SMEs.*

Moving on, it is understandable that quality is of the information is an important part of MkIS. Ismail (2011) has highlighted the importance of utilizing the MkIS for decision-making. He stresses that the art of decision-making provides a variety of approaches and techniques that is useful in making quality decisions. Also his research has confirmed that there is a positive relationship between the level of utilization and adopting the decision support system and the success of organizational decision-making. Together with this, he stresses that MkIS design is important since the quality of MkIS has shown to influence the effectiveness of decision making. According to Berenson (1969) MkIS needs to be established to generate an information flow that is proficient in providing a satisfactory base for management decision making in marketing related issues. The creation of MkIS allows catering for organization's marketing activities. Each of its components, the internal and external influences the process of decision making (Nedeva, 2004a).

The development of IS through market segmentation is supported as formal methods of decision making (Rodrigues and Chen, 2008). Crawford (1997) in his paper has mentioned that marketing research serves marketing management through providing information which is relevant for making decision. He also highlights that marketing research does not itself make decisions neither it guarantees success but it helps to reduce uncertainty surrounding the decisions to be made.

Kotni (2011) recommends that MkIS must be designed and developed in such a way that it has best fit with the decision making process. Thus, if the system is designed well then there would be higher chances of utilizing all the information provided to predict the future marketing directions of the business. Amaravadi *et al.* (1995) propose intelligent MkIS as a method for supporting marketing decision making.

However, Li *et al.* (1993), state that fortune 500 companies extensively use MkIS; and use computers and internet technology to support data collection. Tuominen (2002) also highlights the potential use of MkIS at various levels of organizations. Research conducted by Tanyeri *et al.* (2002) on small and medium size health care

organizations has revealed that 55.6% of the organizations that use MkIS and have a defined system, provides the required information for decision-making through basic data analysis. Global marketing management needs to be executed on the basis of reliability, time, verifiability and high-quality marketing information which will ensure valid decision making in the global business (Grubor, 2010). The review of literature above shows the linkage of quality of MkIS with effective decision making. Thus, Hypothesis 2a is as follows:

H2a: *Quality of MkIS enhances decision making.*

Moreover, the quality of information and decision-making gives a logical understanding on how to implement strategies in their daily business activities. Research conducted by Delone and Mclean (2003) has revealed that the quality of information has a significant association or impact on an individual and his decision making. The quality of information was measured in terms of accuracy, timeliness, completeness, consistency and relevance, while the individual impact was measured in terms of decision-making performances and quality of work. Study by Madapusi and D'Souzab (2005) has also found that the improvement in the quality of information improves the quality of decision-making.

Chengalur-Smith *et al.* (1999) are of the view that the quality of data determines the quality of information and the information that is used for decision making. Kerr *et al.* (2007) suggest that the organizations need to enhance the quality of data for improving the decision making and thus, reducing the level of uncertainty for producing more timely and accurate decisions outcomes. According to Lima *et al.* (2011) best decision related to health services can be made through the quality of information provided to the Health system (e-health system). One of the important supposition of decision making process and improvement of the quality process in business is the existence of the quality information (Zager and Zager, 2006). Hence high quality information is required everywhere, and every time for making business related decisions.

In an era of unlimited data and information overload it is very difficult to make choices between alternatives (Lurie, 2002). The author explains the extent to which this information is used to provide the insights into customer decision making (*ibid.*). In a study by Vermaak (2011) which looked at the kind of information that is needed to make effective decisions, it was found that quality of information is indeed positively related to the quality and effectiveness of decision making. Thus, Hypothesis 2b is as follows:

H2b: *Quality of information is positively related to the effectiveness of decision making.*

Furthermore, information can play different roles in decision making process related to global business activities, through the use of high- quality information (Grubor, 2010). As Delone and Mclean (2003) have shown that quality of information has a positive correlation with the decision-making; therefore, this is only possible by ISs. An expert system is required to manage and integrate the asset information with the effective decision support to assist in the decision making process (Faiz and Edirisinghe, 2009).

Sarmont (2006) shows that after the creation of MkIS some of the major changes will be the increase in the quantity and the quality of information that is required for making managerial decisions. Marketing research is one of a major component of MkIS. Thus, marketing research is such a critical part of marketing intelligence system; it helps to improve relevant decisions making and timely information. Every decision poses exclusive need for information so that pertinent strategies can be developed based on the information gathered through marketing research (Aaker *et al.*, 2001).

In the current business environment, quality of information is required to ensure that companies achieve competitive advantages by using that information to make decisions more efficiently and briskly than their rivals (Preston and Hayward, 2001). Study by Ramezan (2009) shows that the effectiveness of marketing information is also based on the support services. Their important dimensions of an effective MkIS were: (a) quality of the system, (b) information quality, (c) quality of MkIS, (d) MkIS compatibility and finally (e) flexibility.

According to Cox and Good (1965) quality of information can be upgraded more rapidly than the quality of management. They are of the opinion that it is easy to throw the management system out by installing a more sophisticated MkIS. Hence, a strong, sophisticated system such as MkIS is required by the businesses in order to track all sorts of information that is useful in decision making. Thus, Hypothesis 2c is as follows:

H2c: *MkIS for decision-making is dependent on the overall quality of information.*

Moving on, the quality of information in well-designed data storage with business−friendly software provides an effective analysis (Popovic *et al.*, 2009). According to Anderson *et al.* (2008) prioritizing the dimensions that influence information quality assurance, ensures quality of the content for the storage in data warehouse. English (1997) highlights that for quality information it is important to see how the information and the data are managed through auditing data warehousing.

Loshin (2006) suggests that the value of the information is also determined by the quality of the data, that is, the improvements of poor data quality will result in high quality information. Thus, the quality of data is measured in terms of completeness, consistency and uniqueness, conformance to business policy. The author defines the dimensions of data quality as set of actionable assertions, which can be measured and reported. According to Bobrowski *et al.* (1999) data quality is measured in terms of completeness, relevance, reliability, amount of data, consistency, correctness, timeliness, precision, unambiguous, accuracy, objectivity, conciseness, usefulness and usability. Hence, the author stresses that quality data leads to quality information and it is only significant through quality data storage and data modelling. Moving on, information quality can be described as the correctness or accuracy of data that supports the work of an enterprise and is measured in terms of immediate beneficiary and customer satisfaction (Hungerford, 1890).

Moreover, data warehouse can have both positive and negative impact on the information quality (Jarke and Vassiliou, 1997). Its positive impact is through data cleaning and evidence and negative impact is usually through delays in updating the data ware house and by the limitations of expressing it in the conceptual models, they added. Data mining techniques can create rich knowledge (Wasan *et al.*, 2006). According to Seifert (2004) over the past years there has been a rapid increase in the volume of information collected and stored. At the same time, the cost of data storage has decreased. Organizations use the data mining tools to analyse customer satisfaction, he added. To meet the demand of information, there should not be any lack of data representation as this may lead to uncertainty in the planning production systems of the firms (Warkentin *et al.*, 2000). Cooper and Collman (2005) have revealed that data mining especially when it draws information from various sources poses special problems such as the privacy of information. This can affect the quality of the information produced. Hence, if the data is stored properly and is analysed using good and appropriate techniques, only then quality information can be ensured. Thus, Hypothesis 2d is as follows:

H2d: *Data storage and data mining impacts information quality.*

3. Research Methodology

The statistical and data environment on SMEs in Fiji is very poor. Kaumaitotoya *et al.* (2008), Reserve Bank of Fiji shows that 10% of the economy is made up of SMEs and 60% of Fiji's labour force, yet there is lack of data or statistics on SMEs. The government has recently highlighted that lack of data or statistics is one of the constraints impeding growth of the micro, SME sector (Narube, 2008). (Narube, 2007, p. 3) also added, "*We lack statistics on SMEs*". Thus, for the purpose of this study, various sources were used to gather data and these were: the Registrar of the companies, the National Centre for Small & Medium Enterprise and the Fiji Bureau of Statistics. A sample size of 100 was selected due to the available time-frame and the budget of this research. After screening the questionnaire, the sample remained at 96. This mainly is due to the reluctance of some SMEs to respond to the questions.

A survey based questionnaire was employed and stratified random sampling technique was utilized for this research. Stratified random sampling involves a process of stratification or segregation followed by a random selection of subjects from each stratum (Cavana *et al.*, 2001). This is one of the most efficient research sampling designs. The major towns that were selected from Fiji were from both Vanua Levu and Vitilevu. The areas selected were namely: Nadi, Lautoka Ba, Suva and Labasa. Since the latest data was not available, from the estimated density of SMEs (2008), approximately 1.5% of top five SMEs density areas were selected. According to the registrar of companies there are many registered and unregistered businesses in Fiji. Therefore, to select 100 SMEs 1.5% was used from each town or else the sample studied could have been very large. The SMEs selected were from manufacturing firms (such as garments, footwear's, manufacturer of furniture's and machinery) and services firms from three major services classified by bureau of statistics (such as wholesale and retail outlets, constructions and engineering services and restaurant services). The sample selection from each town is as shown in the Table 1.

To test the reliability of the variables used for this study, Cronbach's alpha was conducted and the reliability of the results obtained is ascertained and found to be greatly reliable.

The reliability test for this study is in Table 2.

The results have revealed that the reliability is generally above 0.6, which indicates that the reliability scale is generally exceptional and good. The following were the statistical tests performed on the hypotheses of the study (see Table 3).

In order to make this research more manageable and undemanding, only SMEs were used. This research cannot be generalised to any other type of business operations. Due to the limited periods and allocated budget, only a small sample was selected from the SME populations of Fiji.

Table 1.   The research study sites.

Rank	Place	Administrative division	Estimated SME density 2008	Sample Size (100) (1.5% of top five SME density areas)*
1	Suva	Central	2553	40
2	Labasa	Northern	1121	15
3	Nadi	Western	998	20
4	Lautoka	Western	1680	15
5	Ba	Western	908	10

Source: Register if Companies and National Centre for Small and Micro Enterprises Development.
N.B: *shows that the values were rounded off to achieve a percentage close to 1.5%. Upon the survey, not exact numbers could have been interviewed due to the businesses being reluctant to help and due to the short time-frame, so some may differ by few questionnaires. Some have been interviewed little bit more due to the excellent response rate.

Table 2.   Cronbach's alpha values for the reliability test.

Variables	Cronbach's coefficient alpha (α)
Strategies	0.789
Overall quality	0.789
Benefits	0.790

4. Results and Analysis

The results of the survey reveals that **93.8% of SMEs are aware of MkIS** while a small minority 6.3% are not aware. It is further revealed from this survey results that SMEs gained awareness from their marketing information sources and use of the internet. Another potential reason on the whereabouts of MkIS in SMEs is found to be from the entrepreneurs travelling overseas. This was additionally revealed from the survey results with the SME respondents.

The results on the **level of awareness** of SMEs regarding MkIS, discloses that 4.2% of the SMEs have no knowledge about MkIS, 44.8% of SME had slight knowledge, 36.5% had moderate knowledge and 13.5 % of SMEs had most knowledge on MkIS while 1% had greater knowledge on MkIS. It was revealed through the survey with the respondents that most of the SMEs were aware of this system yet they had very "**slight**" knowledge about MkIS. The results reveal that SMEs understand and are aware of this system, though some are not aware of the

Table 3.   Hypothesis and related tests.

Hypothesis	Tests	Test justification
H1: *MkIS usage leads to benefits for SMEs.*	Descriptive statistics	Descriptive statistics was used to study the frequencies of the variables to provide descriptive information of a set of data. *t*-test, sd and mean.
H2a: *Quality of MkIS enhances decision making.*	*t*-test	Here *t*-test is best used to test the mean difference in variables of overall quality of MkIS and the strategies. Upon this, a better comparison is made. The test was perfect in order to test this hypothesis and in obtaining good results.
H2b: *Quality of information is positively related to decision making.*	Correlation test	Co-relation was used to show the relationship and correlations between two normally distributed variables of strategies and overall quality. This was the best method that shows the significant relationship for this hypothesis.
H2c: *MkIS for decision making is dependent on the overall quality of information.*	Chi-square tests	Chi-square tests are a non-parametric test used to establish interdependence between two nominal variables. Thus, overall quality and strategies were tested through this test in order to obtain an accurate and precise result.
H3: *Data storage and data mining impacts data quality.*	Correlation test	Co-relation was used to show the relationship and correlations between two normally distributed variables of quality and company database. This was the best method that shows the relationship for this hypothesis.

"technical terms" and upon reading the definitions provided in the questionnaire they generally came to know about this system. They generally had fair idea of MkIS but lacked the proper knowledge on how to use this for day-to-day business and marketing decision-making. However, the study has revealed that SMEs' level of understanding or awareness regarding MkIS was "slight"; perhaps they are not engaged in the proper usages of this system.

The fact is that SMEs are considerably aware of MkIS though they make little usage of the system.

The results of this study reveals that 21.9% of the SMEs have databases while 56.3% of the SMEs do not have the databases (others were non- responses). The study found that 21.9% of the SMEs having database are not properly meant for marketing purposes. They make little use of these databases for storing other relevant information. The Fig. 1 below explains the distributions:

Furthermore, this research study result explains the forms of databases the SMEs use, how they analyse or model their data and what information do they draw from those data warehouses. The results of these findings show that 10.4% of the SMEs had business database while 7.3% of the SMEs had customer databases, while the rest had no responses. Majority of the data were modelled through point-of-sale-record and some of the information drawn were, customer buying behaviour, customers lifetime values, product growth and developments and predict sales & profits more clearly.

This study has found that the SMEs that were using the models were using very simple models (that fits their scope and budget) to model the data. These data retrieved from the databases, helped the SMEs to make some business related decisions not necessarily business marketing decision. Larger portion of the sample did not have the databases, yet those who had databases mostly used point-of-sale-record to model their data.

To achieve the purpose of this research: "To identify and evaluate the benefits of using MkIS by SMEs", descriptive analysis was performed and the mean values were calculated.
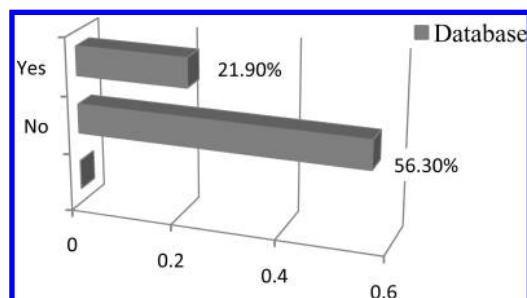
The results of our survey reveals that majority of the SMEs had noticed "extreme" (51%) changes in their business from the time they deployed some form of technologies in their business. The mean value of 3.6 also symbolises value of 4 in the 5 point likert scale, showing that "extreme" changes have occurred within the business from the time they deployed some form of technologies in their business. Some of the changes which they had highlighted during the survey are; it is time saving, makes work go fast, technologies allow for greater reliability, flexibility and document keeping then manual ways of doing things. Generally, it was a pleasing sign to see that the SMEs were really appreciating the upbringing of new technologies into the system. Thus, to fulfill this objective it was found that those SMEs were using some form of MkIS (such as ICTs, market intelligence, simple formulas and simple databases) or any technologies have noticed changes in their business. The results reveal that there is an "extreme" change in their business activity from the time they started using the technologies or from the time it was not in place. Some of the changes such as ease in communications, faster ways of doing things and meeting tight deadlines enable the SMEs to conduct their business practices smoothly. Figure 2 (pie chart) below provides figures related to their changes in the business.

Moreover, these SMEs perceive that MkIS is indeed a beneficial system. The results of our survey reveals that 100% of the SMEs believed that MkIS is indeed beneficial to them in one form or the other though it was found that they do not make extensive use of it. Even though 100% of the SMEs in Fiji are not using this MkIS, they had the opinion that the use of MkIS can be very beneficial. Thus, we can say that generally SMEs have fair idea about MkIS, but are not using them. Due to the various drawbacks, it is seen that most of the SMEs in Fiji do not use this system massively.

Table 4 provides with a list of potential benefits of the system. This Table 4 below exhibits the results of the benefits perceived by SMEs and helps test **H1** of the study.
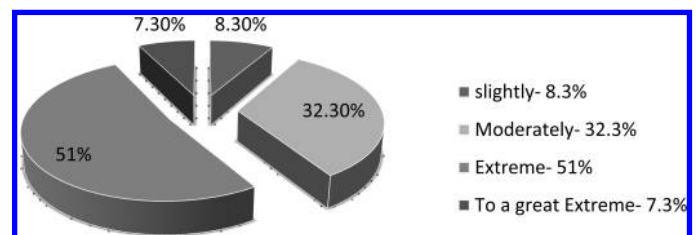

Fig. 1.   Databases.

Fig. 2.   Change in the business.

Table 4. Benefits.

Benefits	SA (1)	A (2)	N (3)	D (4)	SD (5)	Mean	t	Sig.
St1: It serves as a system framework for the organization.	33.3	56.3	10.4	—	—	1.7	27.818	0.000
St2: Easy to track customers.	54.2	38.5	6.3	—	—	1.5	22.763	0.000
St3: Helps getting accurate and timely information every time.	47.9	45.8	6.3	—	—	1.6	25.438	0.000
ST4: Additional step to improve the quantity and quality of goods, services and processes.	49.0	42.7	8.3	—	—	1.6	24.323	0.000
St5: Improve marketing intelligence to assess the environmental factors.	46.9	45.8	7.3	—	—	1.6	25.199	0.000
St6: Improved timeliness of sales reports.	55.2	37.5	7.3	—	—	1.5	23.574	0.000
St7: The process of order−shipping−billing cycle.	60.4	31.3	8.3	—	—	1.5	22.347	0.000
St8: Improved marketing results.	63.5	28.1	8.3	—	—	1.4	21.935	0.000
St9: Improves productivity.	70.8	26.0	1.0	1.0	—	1.6	6.858	0.000
St10: Function integration.	64.6	28.1	5.2	2.1	—	1.4	20.445	0.000
St11: Marketing databases.	62.5	29.2	6.3	2.1	—	1.5	20.398	0.000
St12: System support.	67.7	27.1	3.1	2.1	—	1.4	20.829	0.000
St13: Strategies development.	71.9	22.9	4.2	1.0	—	1.3	21.491	0.000

N.B: Some may not tally to 100%, due to the non-responses.

H1: *MkIS usage leads to benefits for SMEs.*

Table 4 helps to understand the benefits of MkIS. The above item list has the potential benefits of MkIS and the respondents were asked to articulate their agreement to each point. These benefits were presented to the SME respondents with a major aim of promoting the benefits of this system and creating a better form of awareness on MkIS. The benefits were explained and the respondents were required to show their agreements with each of the benefits present in the table. For each of the statements, the mean value categories those into the scale of 2 in 5 point likert scales, which symbolises "agreed". Therefore all the statements are generally agreed.

Statement 1 from the list shows that "It serves as a system framework for the organization". The result shows that 56.3% of the SMEs "agreed" that MkIS provides a system framework for the organization. This was just because that they believe that this system will help to handle very sensitive issue and information in the business prudently. Apart from this the Fijian SME believes that this system will allow conducting the work at a very competent manner.

Statement 2, exhibited in Table 4 shows that 54.2% of the SMEs "strongly agrees" that this system will allow for easy customer tracking. This is just because the MkIS will require all information's from the external and internal marketing environment sources through marketing intelligence and marketing researchers on their customers. Subsequently, the system will ensure that the given information is properly modelled to provide the exact information's about its customers' choices or preferences or their buying behaviour.

Statement 3 shows that MkIS helps to get accurate and timely information every time. The survey results reveal that majority (47.9%) of the SMEs "strongly agreed" with the statement. MkIS indeed helps in getting the accurate and timely information every time, since it will help to store all the relevant data in the database and when required it can retrieve data from the databases and model it to the kind of information required. Also they agreed because all the informations will be stored in the data warehouse, thus no need to waste time to go over manual papers to look for some information. At time the manual papers go missing thus can lead to the loss of some important piece of information. Therefore, this system helps to get the timely informations.

In reference to Statement 4, from the Table 4 which shows that this system can be an additional step to improve the quantity and the quality of goods, services and process. 49% of the SMEs "strongly agreed" with this statement, however looking at their mean values of 1.6., it can be concluded that this item is being generally agreed. Thus, this is because upon receiving the accurate and timely information from the system, wise and appropriate decisions can be made. The information collected will help the business to make process, product and service improvements. The system will provide the best modelled informations to be implemented or used as their strategies. Eventually, better strategies will lead to the improvement in their quality and quantity of good, services and process as a whole.

In regards to Statement 5, improving marketing intelligences to assess environmental factors, the results shows that 46.9% of the SMEs "strongly agree", while 45.8% of the SMEs "agree" that the marketing intelligence can be further improved to better assess the environmental factors. However, the mean value of 3.6 shows that mainly the respondents "agreed" to this statement. The reason for their agreement for this item could be that proper MkIS in place will ensure that their marketing intelligence is updated. Hence, this will allow the business to provide ongoing training to train them to spot innovations and developments. This therefore, depicts that by having MkIS the business will have some level of market intelligence that will enable them to effectively diagnose and deal with environmental factors.

Statement 6 of the table expresses that MkIS will improve the timeliness of sales report. Generally the SMEs "strongly agree" (55.2%) to this statement, yet the mean values generalise this statement to "agree". Hence, every business needs to focus in sales. So to provide better sales report, this system aims to see that best strategies are selected to make marketing decisions. The better marketing decisions the more the sales. Hence most of the benefits attached to this system flows indirectly due to its tremendous effects of this system.

Statement 7 focuses on the other benefits of improving the process of order-shipping and billing cycle. 60.4% of the SMEs "strongly agree" while the mean value of 1.5 summaries this statement as "agree". The result was obtained just because this system allows many indirect benefits attached to it. Thus the more the sales the more emphasis will be paid by the organization to improve the shipping and billing cycle, eventually attracting more customers through better sales and customer services.

Statement 8 exhibited in Table 4 emphasises on the improvements in the marketing results. 63.5% of the SMEs "strongly agrees" that there will be an improvement for sure in the marketing results. This is because the MkIS will allow for better management of information, better analysis of informations, allowing for the better decision making with the best modelled and updated informations. This system will integrate all the marketing process to enhance the marketing results for the business through more marketing researchers and marketing intelligence.

70.8 % of the respondents "strongly agree" that MkIS helps to improve the productivity. This result was such because this system will ensure that behind quality decision making lies the true reasons to improve their productivity level to gain more sales. Once all the information is well managed, decisions are made to ensure that what will be their next step. So to further improve their productivity level a major priority can be given to improve and produce more sales, thus increasing customer satisfactions ultimately.

62.5% of the SMEs "strongly agrees" that there can be more function integrations through the use of MkIS. To support this MkIS will be a part of business system that will help the business in terms of marketing, whereas it is essential that MkIS is also a part of the other IS used by the business as it will allow for greater functions integrations within the business. The presence of MkIS in the daily business process will provide the function integration among the business process.

Statement 11 shows that, 62.7% of the SMEs "strongly agree" that the presence of MkIS will help to provide marketing databases. Thus, it can be concluded that the SMEs agreed that this system would help to store all the relevant data in data warehouse. This will ensure that all the data is properly kept and can be utilized in an appropriate manner by this system to produce quality information.

Statement 12 exhibited in Table 4 shows that 67.7% of the SMEs "strongly agree" that it acts as a system support. Through the management of the data and information, this system will act as a system support to provide the business with timely and relevant information needed by the business in any point of time.

Finally, 71.9% of the SMEs "strongly agree", that MkIS help in the strategy development. With the greater help of the marketing intelligence and marketing research, the system is able to assess the relevant information, model them and present it to the business with the current trend in the markets or current directs, thereafter these are used to develop the appropriate strategies.

One sample t-test was run to test the overall benefits through the use of MkIS. One sample t-test is used to test whether a sample mean of a normally distributed variable (benefits) significantly differs from the hypothesised values. In analysing the t-values it was found that MkIS usage leads to the envisaged benefits as all the significance values (0.000) were less than p-value 0.05. Thus, **H1** is accepted in this study that MkIS usage leads to benefits for SMEs (see Table 5).

To test **H2a:** Quality of MkIS enhances decision making one t-test was conducted. The results obtained shows that quality of MkIS has a mean difference value of 4.14, that is near to the rating of value 4 in the 5 point likert scale, which implies that the quality of MkIS "mostly" enhances decision making in SMEs. Moreover, in one sample test also shows that the significance value of (0.00) is less than the p-values of 0.05, thus the quality of MkIS significantly explains its impact in terms of enhancing decision making.

K. Devi, G. Singh and R. Naz

Table 5.   Summary of *t*-test.

	Test value = 0				95% Confidence interval of the difference	
	t	*df*	Sig. (2-tailed)	Mean difference	Lower	Upper
ST2: Do you think marketing information helps you to make the important decisions related to your business needs?	48.027	95	0.000	4.14*	3.97	2.83

Note: *Rounded off to one decimal place.

To further understand the concept of overall quality of MkIS with decision making the similar test was carried out. One sample *t*-test was run to test the results of the overall factors of quality MkIS on decision making. The Table 6 shows the results obtained.

Table 6 shows the results of *t*-test (one-sample tests) of the overall quality of MkIS. The results obtained from the Table 6 above shows that Statement 2 has a mean difference of 4.14 representing value 4 "**mostly**" in the 5 point-likert scale. While the mean difference of Statements 1 and 5 to 8 is the represent value of 3 in 5 point likert scale, which implies that the statements are categorised in "moderate" category. Thus, Statement 2 is the best statement showing that quality MkIS is important for decision making and also the mean difference of 4.14 proves the statement is most effective and has the of significance (0.00). Thus, **H2a:** Quality of MkIS enhances decision making is accepted in this study.

In alignment with the findings of this research, Ismail (2011) expresses the critical role played by the MkIS in decision-making. In accordance to his finding, each component of MkIS has a positive relationship with decision-making. MkIS has a database that facilitates greater strategic decision-making, (Amaravadi *et al.*, 1995). He

urged on the use of intelligence MkIS to support the greater decision making process. The literature has shown the quality of MkIS for decision-making is important but in various context. However, their eventual findings or focus is on the use of MkIS for decision-making process. In a paper by Alshaikh (2010) the importance of marketing information on decision-making is highlighted. His finding on MkIS with the organisational decision-making displayed a positive relation, which is consistent to this research finding.

Moreover, Wierenga (2008) expresses that higher quality marketing management support system is essential for decision-making. This system is related to MkIS. The marketing management support system makes substantial contributions towards quality marketing decision. Thus, quality of a system also affects the quality of decision-making. Chang and Yang (2005) also highlights on the need of MkIS for facilitating decision making for the marketing managers. The reviews have supported this research finding by showing the significance of MkIS and decision making, however no direct relationship of quality (in terms of reliability, accuracy, confidence and marketing sources) of MkIS with decision making was found, hence it is a new finding in this research.

Table 6.   *t*-test for overall quality.

Overall quality	*t*	Sig. (2-tailed)	Mean difference
St1: Do you get the needed marketing information in time?	32.00	0.000	2.67
St2: Do you think marketing information helps you to make the important decisions related to your business needs?	48.03	0.000	4.14
St3: Do you understand marketing information thoroughly?	34.55	0.000	2.83
St4: Is this marketing information enough in content?	35.69	0.000	2.77
St5: Do you think this marketing information is reliable and accurate?	35.20	0.000	2.85
St6: Do you access the marketing information of your business from various sources?	32.04	0.000	3.35
St7: Do you think that your present MkIS needs to be improved further for making efficient and timely marketing related decisions?	34.31	0.000	3.28
St8: Do you rely and have confidence in the marketing information sources?	29.33	0.000	2.56

Note: *Rounded off to two decimal place.

With reference to **H2b:** Quality of information is positively related to the effectiveness of decision making, correlation was conducted. The results obtained from this test showed a Pearson correlation value of 0.36 which shows that there is positive relationship between the quality of information that feeds into the MkIS and it is significant at a level of 0.05 as 0.000 is less than p-value of 0.05. Thus, **H2b:** Quality of information is positively related to the effectiveness of decision making is accepted in this study.

Leitheiser (2001) suggessts that the assurance of quality decision-making is dependent on the quality of data. The Audit Commission of Scotland (2007) express on improving the information for the decision-making purposes. This commission's focuses on the importance of data quality, for securing good quality of information for decision-makings. Ultimately, it concludes that the key superior information to support decision-making accounts for the quality of data that underpins the informations.

Ge (2009) greatly supports the importance of information quality for decision-making process for any business. His thesis shows the relationship between information quality and decision making. The results showed the positive relationship between the two, which is consistent to the findings of this study. Cheng *et al.* (2012) highlight in their paper that the increase in information quality should lead to the increase in the unconscious thought of decision-making. This unconscious thought significantly influences customer satisfactions.

Moreover, Dillon *et al.* (2010), focuses on the decision-making through the quality information. His finding reveals that the timeliness and the relevance of information quality improve superior decision. Thus, this finding implies that quality of information has a positive relationship with decision-making. In accordance to Baskarada *et al.* (2006) quality of information is aimed at improving the organisational learning and decision making. They concluded that quality information profoundly affects the makings of relevant decisions and poor quality information results in greater financial loses. These reviews support the importance and the similarities to this research finding, that quality of information is positively related to decision making.

To test **H2c:** MkIS for decision-making is dependent on the overall quality of information Chi-square test run. The results depict a Chi-square value of 66.71 and significance values of 0.00 which shows that MkIS used for decision making is dependent on overall quality of information that feeds into MkIS. Thus, **H2c** is accepted in this study.

Chaneta (2010) has shown that MkIS digest data and produce information for decision-making process. He also highlights the importance of MkIS to improve the quality and quantity of decision related information, generally showing the interdependence of the two variables. Alwis and Higgins (2001), identify information as an important resource for decision-making and the quality of information is more important than the source of accessibility. Wober (2003) extensively stresses on the importance of the information in this era. Decision support system uses information to provide quality decision making. The cost of information is successfully designed in various perspectives such as information quality and system quality (Pialin and Yongyut, 2011). His results show that the cost of information and decision-making is positively related. Much research has been done and each research is unique on its own, however, some display similar results while others are being tested differently using different variables. Thus, there is a significant support which shows that MkIS for decision-making is dependent on the overall quality of the information.

To test **H2d:** Data storage and data mining impacts information quality. Correlation test was run. The results show a Pearson value of 0.063, the extent to which companies use database and data warehouse for data storage and data mining which positively influences the overall quality of MkIS information. However, the significance value of 0.592 is far greater than the p-value of 0.05. These results were obtained because 56.3% of the SMEs do not use database and data warehouse in their daily business practices. Only 21.9% of the SMEs use it, thus, this is the key reason why the degree of significance cannot be explained. Thus, **H2d** is rejected in this study.

5. Conclusion, Implication and Future Research

Marketing is a very important tool for a successful business. SMEs are the hope for many people in terms of employment, alleviating poverty and as well as making substantial contribution towards the economy of Fiji. On the other hand, in this techno centric world, SMEs need to make a move forward and start using MkIS. They must make a stand and fight enthusiastically towards the challenges they face and move towards success. MkIS is proving to be one of the most promising factors. There is also a need to organise many campaigns so that more awareness is created on marketing. The policy reviewers should work hand in hand with the government and other organisations responsible for the SMEs, to ensure that more information is provided to SMEs. Training and

workshops will help them to upgrade their marketing skills and will also create awareness on the most innovative methods of doing marketing. The advisory support and businesses conference will allow businesses to leverage information and tap into this knowledge sharing process in identifying market opportunities. This will then eventually help in promoting the importance of MkIS for businesses. This can be made possible through the integrated help by NCSMED, the governments, financial institutes and the donor organizations. SMEs in Fiji need to really strengthen their marketing skills and know-how. Marketing information also brings an immediate need for data base which most of the SMEs lack, and as a result are hampered in their ability to respond to the immediate marketing issues (such as finding their prospective customers and informing them on promotion activities, have difficulty in finding and establishing their target customers (poor position effects). The slow-pace of SMEs and their attitude towards change has made them very backward in their businesses and has failed to recognise many marketing opportunities. The study has, through the interview with the respondents, identified that at the current stage, they are not willing to innovate. This attitude could serve as a major bottleneck in the change process towards adopting MkIS and leveraging the benefits that could accrue. To change this kind of attitude the governments and NCSMED should urge the SMEs to take a step forward and attain a blooming and meaningful livelihood for everyone in Fiji. The motivation and drive within the SMEs is critical to ensuring success. Also important is identifying the kind of marketing information that SMEs need to make informed decisions. By specifying the information needs and recognising that these information needs may depend on the Fijian context in which marketing decision-making takes place, MkIS designers can design systems to ensure that information with these characteristics are made available.

MkIS may serve as a great tool in enabling the Fijian SMEs to systematically and proactively plan and strategically analyse the internal and external environment and devise appropriate strategies in relating to their core business customers. It is a known fact that SMEs tend to focus more on the tactical and operational issues concerning their businesses and less on the strategic elements.

Future research should investigate the SMEs on the use of MkIS based on rural and urban scattered areas in developing countries. This study is only done in Fiji and in future comparative research can be done among the other South Pacific Islands. A longitudinal study could be done to assess and benchmark the usage and benefits of MkIS on the SMEs similar to those in developed countries.

References

Aaker, DA, V Kumar and G Day (2001). *Marketing Research*. John Wiley & Sons, Inc.

Al-allak, B (2010). Evaluating the adoption and Use of internet-based marketing information system to improve marketing intelligence: The case study of tourism SMEs in Jordan. *Internal Journal of Marketing Studies*, 2(2), 87−93.

Alshaikh, MS (2010). *The Effects of Marketing Information System on Decision Making*. Research Economic ET managerial. Available at: http://www.univ-biskra.dz/rem/Revue_07/article%2001%20fr.pdf [last accessed on 7 December 2011].

Alwis, MS and SE Higgins (2001). Information as a tool for management decision making: A case study of Singapore. *Information Research*, 7(1), 1−25.

Amaravadi, SC, S Samaddar and S Dutta (1995). Intelligence marketing information system: Computerized intelligence for marketing decision making. *Journal of Marketing Practice: Applied Science*, 13(2), 4−13.

Anderson, D, H Fries and P Johansson (2008). The impact on decision support and decision making process. Business Intelligence. Unpublished Master's thesis, Jonkoping University, Norway. Available at: http://hj.diva- portal.org/smash/record.jsf?pid=diva2:3599.

Bakos, JY (1991). Information links and electronic marketplaces: The role of inter organizational information systems in vertical markets. *Journal of Management Information Systems*, 8(2), 31−52.

Baskarada, S, J Gao and A Koronios (2006). *Business Information System*. Available at: http://sim.unisa.edu.au/publications/public/Agile%20Maturity%20Model%20Approach%20to%20Assessing%20and%20Enhancing%20the%20Quality%20of%20Asset%20Information%20 in%20 Engineering%20Asset%20Management%20Information%20Systems.pdf [last accessed on 7 December 2011].

Berenson, C (1969). Marketing information system. *Journal of marketing*, 33(4), 16.

Bobrowski, M, M Marre and D Yankelevich (1999). Measuring Data Quality. Report 99-002, Universidad de Buenos Aires, Buenos Aires, Argentina (1999) Available at: http://www.pragmaconsultores.com/uy/actualidad/Documents/Measuring%20 Data%20Quality.PDF [last accessed on 21 January 2012].

Brunda, P (1996). *Marketing Information System*. Silesian University, Opava. Available at: http://www.opf.slu.cz/vvr/akce/turecko/pdf/Brunda.pdf [last accessed on 5 September 2011].

Buttery, A and R Tamaschke (1996). The use and development of marketing information system in Queensland. *Australia, Marketing Intelligence & Planning*, 14(3), 29−35.

Byrt, A (2007). *European SME Challenge: Munich Meeting on European SME Development & Exhibition Industry.* Available at: www.localglobal.de/download/ SME_Munich_Meeting.pdf.

Cavana, T R, LB Delahaye and U Sekaran (2001). *Applied Business Research. Quantitative and Qualitative Research,* Australian Edition. Australia: John Wiley & sons.

Chaneta, I (2010). *Gathering Information for Marketing Decision- Making.* The African executive. Available at: http://www.africanexecutive.com/downloads/Gathering%20Information%20for%20 Marketing.pdf [last accessed on 7 December 2011].

Chang, LW and LH Yang (2005). Market entry decision support for evaluating external environments. *International Journal of Internet and Enterprise Managements,* X(Y), 2−21

Cheng, Z, G Jie, W Ke and B Sulin. (2012). Understanding online purchase decision making: The effects of unconscious thought, information quality, and information quantity. *Decision Support Systems,* 53(4), 772−781.

Chengalur-Smith, IN, DP Ballou and HL Pazer (1999). The Iipact of data quality information on decision making: An exploratory analysis. *IEEE Transactions on Knowledge and Data Engineering,* 11(6), 853−863.

Cooper, T and J Collman (2005). Chapter 4 — Managing Information Security and Privacy in HealthCare Data Mining. In, *Advances in Medical Informatics: Knowledge Management and Data Mining in Biomedicines,* New York, NY: Springer Science, pp. 95−137.

Covacheva, Z (2003). Data warehouse architecture on the base of dimensional modelling. *Paper presented at the International Conference on Computer Systems and Technologies.* Available at: http://ecet.ecs.ru.acad.bg/ cst/docs/proceedings/s2/ii-7.pdf [last accessed on 5 August 2011].

Cox, DF and RE Good (1965). How to build a marketing information system. *Harvard Business Review,* May−June 1967, 145−154.

Crawford, IM (1997). *Food and Agriculture Organisation of the United Nations Rome.* Marketing Research and Information Systems. FAO Regional Office for Africa. Available at: http://www.fao.org/docrep/W3241E/ w3241e00.htm [last accessed on 4 August 2011].

Delone, WH and ER Mclean (2003). The DeLone and MCLean model of information systems success: A ten-year update. *Journal of Management Information System,* 19(4), 9−30.

Devi, P (2008). E-Governance for small and medium enterprises in developing country like Fiji: Potential and problems. *Critical Thinking in E-Governance,* pp. 235−241, SIGeGOV. Publications. Available at

http://www.iceg.net/2008/books/1/26_235−241.pdf [accessed on 14 December 2011].

Dillon, S, J Buchanan and J Corner (2010). Comparing public and private sector decision making: Problem structuring and information quality issues. In *Proceedings of the 45th Annual Conference of the ORSNZ,* November Available at: https://secure.orsnz.org.nz/ conf45/program/Papers/ORSNZ2010_Buchanan.pdf [last accessed on 7 December 2011].

Dobzhinsky, V (2011). Developing and implementing of marketing information system in JSC "Dalsvyaz". *Technoserv Consulting.* Available at: http://tsconsulting.ru/en/success/showstory.php?ID=695.

Dutka, A (1994). *AMA Handbook of Customer Satisfaction: A complete Guide to Research Planning and Implementing.* Lincolwood, IL: NTC Business Books.

Edwards, L (2009). How the SME can gain competitive advantage through technology. *Business Strategy.* Available at: http://www.helium.com/items/1583364-sme-tools-for-gaining-a-competitive-edge.

Emmanuel, J (2009). The importance of marketing management to SMEs. *Ministry of Commerce, Business development, Investments and Consumer Affairs.* Available at: http://www.commerce.gov.lc/articles/ view/18 [last accessed on 5 January 2012].

English, LP (1997). *Improving Data Ware and Business Information Quality.* Canada: Wiley Computer Publishing, John Wiley & Sons.

Faiz, RB and EA Edirisinghe (2009). Decision making for predictive maintenance in assets information management. *Interdisciplinary Journal, Knowledge and Management.* 4, 24−34.

FAO Corporate document Repository (1997). *Chapter 5 Identifying Market Opportunities Through Marketing Information System and Research.* Available on http://www.fao.org/docrcp/W5973E/w5973e09.htm [last accessed on 23 June 2011].

FAO (2010). *Chapter 2— MIS and Markets for Non-timber forest Products, Forestry Departments.* Available on http://www.fao.org/docrep/005/ac692e/AC692E03. htm#TopOfPage [last accessed on 10 January 2011].

Ge, M (2009). Information quality assessment and effects on inventory decision- making. PhD thesis. Available at: http://doras.dcu.ie/14857/1/Thesis_Mouzhi.pdf [last accessed on 5 July 2011].

George, S (1998). *Total Quality Management: Strategies And Technology and Organisation Transformation. Innovation for the 21st Century Organisation.* New York: Wiley.

Goessl, L (2011). The benefits and challenges of using information system in business. *Helium.* Available at: http://www.helium.com/items/1703037-the-benefits-and-challenges-of-using-information-systems-in-business [last accessed on 10 January 2012].

Gomes, R, F Bingham and P Knowles (2005). *Business Marketing* third edition. New York: McGraw-Hills Companies, Inc.

Grubor, A (2010). Information global marketing management. *Management Information System*, 5(2) 003−007.

Hakhu, R (2010). *Development of Marketing Information Model for the Small and Medium Enterprise in India, MkIS Model for SMEs in India.* Available at: http://www.authorstream.com/Presentation/hakhu-427300-mkis-model-smes- india-marketing-information-system-small-medium-enterprises-rahul-entertainment-ppt-powerpoint/ [last accessed on 5 August 2011].

Hess, RL, RS Rubin and LA West (2004). Geographic information systems as a marketing information system technologies. *Decision Support System*, 38, 197−212.

Hungerford, MW (1890). In: Molly Bawn. Smith, Elder and Company. London. Chapter 2—*Defining Information Quality.* Available on http://www.infoimpact.com/IQBook/Ch.2-Book-Defining_Info_Quality.pdf [last accessed 21 March 2012].

Ismail, ST (2011). The role of marketing information system on decision making "An applied study on royal jordanian air lines (RJA)". *International Journal of Business and Social Science*, 2(3), 175−185.

Jarke, M and Y Vassiliou (1997). *Data Warehouse Quality: A Review of the DWQ Project.* National Technical University of Athens (NTUA), University of Rome.

Kaumaitotoya, B, J Serulagilagi and S Nacanaitaba (2008). *Keynote Address At The Nationam Micro, Small & Medium Enterprises (MSME) Forum by Governor of the Reserve Bank of Fiji.* Available at: http://www.reservebank.gov. fj/docs/Keynote%20Address%20National%20MSME%20Forum.pdf [last accessed on 6 March 2011].

Kerr, K, T Norris and R Stockdale (2007). Data quality information and decision making: A healthcare case study. In 18th *Australasian Conference on the Information System.* Toowoomba.

Khosla, B (2011). Marketing information system — a potent tools to boost SMEs marketing. *SME Times.* Available at: http://smetimes.tradeindia.com/sme-times/editorial/2011/Aug/16/marketing- information-system-a-potent-tool-boost-sme-marketing50.html.

Kishore, CS (1999). *Need for Marketing System.* Available at: http://www.cskishore.com/marketis.htm [last accessed on 22 June 2011].

Kotni, VVDP (2011). A study on internal mechanism of marketing information system. *IJCST*, 2(3), 64−67.

Leitheiser, RL (2001). Data quality in health care data warehouse environments. In *Proceeding of the* 34th *Hawaii International Conference on System Science* -2001. available at: http://www.hicss.hawaii.edu/HICSS_34/PDFs/HCIST01.pdf [last accessed on 6 December 2011].

Li, EY, Jr, R. Mcleod and JC Rogers (1993). Marketing information systems in the fortune 500 companies: Past, present, and future. *Journal Management Information System*, 10(1), 165−192.

Lima, L, P Novais, R Costa, BJ Cruz and J Neves (2011). Group decision making and quality of information in e- health systems. *Journal of the IGPL*, 19(2), 315−332.

Lin, C and C Hong (2009). Development of a marketing information system for supporting sales in a tea-beverages market. *Experts System with Applications*, 36, 5393−5401.

Lingham, L (2008). Managing a business/information system for managers. *All Experts.* Available at: http://en.allexperts.com/q/Managing-Business-1088/2008/11/Information-System-Managers.htm [last accessed on 1 April 2011].

Lokhande, P and RK Srivastava (2004). *NICNET Based Agricultural Marketing Information System Network (AGMARK-NET).* Available at: http://agmarknet.nic.in/pig001.pdf [last accessed on 7 September 2011].

Loshin, D (2006). *Monitoring Data Quality Performance Using Data Quality Metrics.* Available at: http://www.it.ojp. gov/documents/Informatica_Whitepaper_ Monitoring_DQ_Using_Metrics.pdf [last accessed on 21 January 2012].

Lurie, N (2002). Decision making in information- rich environments: the roles of information structure. *Advances For consumer Research*, 29, 91-92. Available at: http://www.acrwebsite.org/volumes/display.asp?id=8566 [last accessed on 5 September 2011].

Madapusi, A and D D'Souzab (2005). Aligning ERP System with International Strategies. *Journal of Information System Management* (ISM), 12(1), 7−17.

Marimuthu, M and S Muthaly (2009). The relationship between marketing communication constituents, perceived benefits and information system adoption. *Paper presented at the Australia & New Zealand Marketing Academy Conference,* Melbourne. Available at: http://www.duplication.net.au/ANZMAC09/papers/ANZMAC2009-701.pdf [last accessed on 4 October 2011].

Melchioly, RW and O Saebo (2010). *ICTs and Developments: Nature of Mobile Phones usage for SMEs Economic Development- an Exploratory Study in Morogoro, Tanzania.* Available at: http://mak.ac.ug/documents/IFIP/UgandaPaperSimon. pdf [last accessed on 5 August 2011].

Montgomery, DB and GL Urban (1969). Marketing information systems: An emerging view. *Working Paper.* 2−15.

Murray, P (2005). Improving marketing intelligence through learning systems and knowledge communities in not-for-profit workplaces. *Journal of Workplace Learning*, 17(7), 421−435.

Murray, BK (1991). A test of services marketing theory: Consumer information acquisition activities. *The Journal of Marketing*, 55(1), 10−25.

Narube, S (2007). *Realising & Fostering the Potential of Small & Micro Enterprise in Fiji*. Available at: http://www.reservebank.gov.fj/docs/Introductory%20Remarks%20By%20Governor.pdf [last accessed on 5 November 2011].

Narube, S (2008). SME data vital for growth. *Fiji Times Online*. Available at: http://www.fijitimes.com/story.aspx?ref=archive&id=90018.

Nedeva, IV (2004a). Contemporary concept of web based integrated marketing information system. *Trakia Journal of Science*, 2(4), 22−27.

Pialin, N and R Yongyut (2011). Cost information effectiveness of Thai electronic business: Effects on decision making advantage. *Internal Journal of Business Strategy*, 11(2).

Popovic, A, PS Coelho and J Jaklic (2009). The impact of business intelligence system maturity on information quality. *iR Information Research*, 14(4). Available at: http://informationr.net/ir/14-4/paper417.html [last accessed on 8 November 2011].

Preston, BJ and T Hayward (2001). *Strategy, Information Processing and Scorecard Models in the UK Financial Services Sector*. Department of information and Library Studies, 7 (1). Available at: http://informationr.net/ir/7-1/paper122.html [last accessed on November 2011].

Project Mobius, (2011). *The Importance of Marketing Information*. Available at: http://www.projectmobius.org/938/the-importance-of-management-information-system-in-marketing.html [last accessed on 28 July 2011].

Quester, PG, RL McGuiggan, WD Perreault and EJ McCarthy (2004). *Marketing: Creating and Delivering Value* fourth edition. Boston: McGrawHill.

Ramezan, M (2009). Measuring the effectiveness of human resource information systems in national Iranian oil company an empirical assessment. *Iranian journal of Management Studies*, 2(2), 129−145.

Rodrigues, G and E Chen (2008). *Optimizing marketing segmentation through an information system using verbal decision analysis in the chamber of commerce in Rio De Janeiro* (CDLRIO). In *Academy of World Business, Marketing & Management Development Conference Proceedings*. 3(1), 423−435.

Sarmont, (2006). Solutions aimed at the results. Creation of marketing information. *The Center of Management Secisions Sarmont*. Available on http://sarmont.by/en/yslugi/mis.html [Accessed on 5 November 2011].

Seifert, JW (2004). Data mining: An overview. *CRS Report for Congress*. Analyst in Information Science and Technology Policy. Available at: http://www.fas.org/irp/crs/RL31798.pdf [last accessed on 5 September 2011].

Sharma, KM and R Bhagwat (2006). Practice of information systems evidence from select Indian SMEs. *Journal of Manufacturing Technology Management*, 17(2), 199−233.

Talvinen, JM (1995). Information system in marketing. *European Journal of Marketing*, 29(1), 19−26.

Tanyeri, M, A Yesilada and T Yesilada (2002). The Use of Marketing Information system in Small and Medium Size Health Care Organisation, pp. 21−31.

The Audit Commission of Scotland (2007). *Improving Information to Support Decision Making: Standards for Better Quality Data*. Available at: http://www.wao.gov. uk/assets/englishdocuments/ImprovingInformationToSupportDecisionMaking.pdf [last accessed on 6 December 2011].

Tuominen, H (2002). Reference model for a marketing information system. In *Engineering Management Conference, 1994. 'Management in Transition: Engineering a changing World', Proceedings of the 1994 IEEE International*. pp. 185−191, October 17−19, 1994.

Vencil, J (2003). *Marketing Information System (MIS) Basics*. Available at: http://www.vpistrategies.com/articles_pdf/MIS_Bsic.pdf [last accessed on 7 August 2011].

Vermaak, M (2011). The impact of real time shop floor information on operational decision making. Master's Degree in Business Administration, University of South Africa.

Waqabaca, F (2010). Financial Systems Developments & Compliance Group Reserve Bank of Fiji. Available at: http://www.scribd.com/doc/37603221/Reserve-Bank-of-Fiji-Small-Business-Keynote-Speech-September-2010 [last accessed on 20 November 2011].

Warkentin, M, R Bapna and V Sugumaran (2000). The role of mass customization in enhancing supply chain relationships in B2 e-commerce markets. *Journal of Electronic Commerce Research*, 1(2), 45−51.

Wasan, SK, V Bhatnagar and H Kaur (2006). The impact of the data mining techniques on medical diagnostics. *Data Science Journal*, 5, 119−126.

Wierenga, B (2008). *Decision Support System as the Bridge between marketing Modella and Marketing Practice*. Available at: http://repub.eur.nl/res/pub/16700/17.pdf [last accessed on 7 December 2011].

Wober, KW (2003). Information supply in tourism management by marketing secision support systems. *Tourism Management*, 24, 241−255.

Zager, K and L Zager (2006). The Role of financial information in decision making Process. *Special Edition on Consumer satisfaction*, — Global Perspective.